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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/539,864	03/31/00	SEKI	Y 0010-1098-0

MMC2/1107
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EXAMINER

PATEL, I

ART UNIT	PAPER NUMBER
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2841

DATE MAILED:

11/07/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/539,864

Applicant(s)

SEKI ET AL.

Examiner

Ishwar B Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-22 is/are pending in the application.
- 4a) Of the above claim(s) 3-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12 September 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 3-18 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 3-18 are directed to a method for forming unevenness of the surface of an insulating layer and a method for producing a multiplayer printed wiring board classified in class 29, subclass 846. Further the product as claimed can be made by a different plasma etching process than reactive ion etching and with etching gas. Further the product as claimed can be made even without using the etching altogether or using another method for increasing the adhesiveness of the resin insulting substrate.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 3-18 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

2. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 19 is a method claim but depend upon claim 19, which is product claim.

Claim Rejections - 35 USC § 103

3. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinada et al., US Patent 6,121,553 in view of Burke et al., US Patent No. 6,042,929, hereafter referred to as Burke and Yasumoto et al., US Patent No. 6,040,068, hereafter referred to as Yasumoto.

Regarding claim 19, Shinada discloses a multiplayer printed wiring board comprising: an insulating resin layer and a conductive layer (laminating a plurality of insulating substrates having conductor circuits thereon, see figure 1H, column 12, line 60-68),

wherein said resin composition comprises a first resin and a second resin and said first and said second resin have different plasma etching rates and said first and second resin are not compatible with each other (adhesive layers made from a thermosetting adhesive layers made from a thermosetting adhesive composition comprising a polyamide-imide resin and a thermosetting component, and the polyamide-imide resin and epoxy resin have different dry etching rates). Though, Shinada fail to disclose the plasma etching of the insulating resin layer, plasma etching of the surface is known in art to roughen the surface for better adhesive strength. Further

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Burke discloses plasma etching to provide a roughened micro profile surface and Yasumoto discloses plasma-etched irregularities having a difference of elevation of about 0.5 to about 200 nm. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Shinada with the insulation resin layer plasma etched in order have better adhesive strength of the plating. ^{as taught by Yasumoto; Burke} Further, though the product by process claims are limited by and defined by the process, the determination of patentability is based on the product it self. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 20, the applicant is claiming the plasma-treated insulating layer has a surface roughness of 100 nm to 4,000 nm. Though, Yasumoto discloses a roughness of about .5 to about 200 nm, it has been held that discovering an optimum value of a result effective variable involve only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the modified circuit board of Shinada with a surface roughness of 100 nm to 4,000 nm in order to have the higher plating reliability.

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Regarding claim 21, Shinada further discloses insulating layer comprises an epoxy resin and a polyamide resin.

Regarding claim 22, though Shinada does not disclose the plasma etching rate of the individual component of the composite insulating resin layer, polymide resin and epoxy resin, as disclosed by the applicant the polymide resin have relatively higher dry etching rate than epoxy resin. Further the selection of the material for the resin composition will depend upon the etching process to be used to have the desired surface roughness for better adhesive strength.

Response to Arguments

4. Applicant's arguments filed on September 12, 2001, paper No. 8, have been fully considered but they are not persuasive. Roughening the surface by plasma etching for better adhesion is known in the art and as explained above, the patentability of a product does not depend on its method of production.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Watanabe et al., and Kennedy et al. Disclose laminates similar to applicant's claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar B Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (703) 308 3301. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
November 1, 2001

A handwritten signature in black ink, appearing to read 'K. L. Wines', with a stylized, cursive script.

K L WINE
PRIMARY EXAMINER